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ABSTRACT

Optical disk technologies now offer a way to move large, complex, remote computer databases from the large urban areas to rural users. Recently, the Optical Information Systems (OIS) Conference provided an opportunity to discuss the use of this new technology for a variety of innovative applications; for example, "The State Education Encyclopedia," published on CD-ROM (compact disk, read-only memoyr) in Texas, which provides remote users with access to an enormous mix of documents in a matter of seconds. In fact, CD-ROM technology offers the opportunity to publish a variety of information of value to rural areas, including state codes of law and administrative codes; packages of guidelines and excerpts of laws, codes, regulations, and other documents; large files cataloging the holdings of libraries; indexes and catalogs that allow easy access to inventories; and maps and indexes to the features of specific local areas. Optical disk technology offers challenges for information seekers to accept new possibilities; for publishers to anticipate seekers' needs; for publishers and users to think about how information is most usefully accessed, displayed, printed out, digested, and stored for end-users; and for city and county officials, business managers, organization leaders, and individuals to carefully evaluate their current methods of storing, using, and accessing information. (KM)

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RURAL COMMUNITIES AND OPTICAL INFORMATION TECHNOLOGIES:

Optical Disks Move Rural America Closer to the Information Mainstream

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Rural Communities & Optical Information Technologies

By David Gray Remington

Summary

The author, director of a small rural public library system in northeast Washington state, attended the Optical Information System West 1987 Conference in Los Angeles in March 1987 to report on any significance the optical information technologies hold for those in rural communities. The impression gained is that optical disk technologies appear to offer some relief to the major problem of easy and cost-beneficial access to computer-based information services by rural businesses, governments, community organizations and individual citizens.

This report assumes that the reader has access to the myriad papers which describe the technical characteristics and capabilities of optical disks and information systems, especially recent optical disk technology reports by David C. Miller of DCM Associates.

Background Perceptions

Rural communities in the United States have not been able to access large computer-based information services as cheaply and easily as urban centers due in part to inadequate and comparatively costly telecommunications services. There seems to be no practical relief in sight which will change the existing situation for rural America short of bypassing the existing telephone system. That is a subject beyond this writer's scope.

Optical disk technologies offer a way to move the large, complex-to-use, remote computer databases from the large urban areas to rural (actually any) users who have a personal computer and an optical disk drive, a combined outlay approaching less than $3000 in 1987.

Publishers of a number of large databases are discovering that their information can be more widely sold and more easily used if produced on optical disks for use with personal computers. They find that the added value of optical disk database publishing includes: (1) searching procedures which are user-friendly for the layperson, (2) new software which analyses and displays the data in more useful ways, and (3) the ability to link indexing and text on the same disk for surprisingly easy use.

The first uses of optical disk for publishing suggest that large, complex files of information heretofor only available through costly long-distance dial-up access or awkward and infrequently published microfiche files can now be easily used by clerks and managers alike via existing personal microcomputers. Some of the software available makes using the optical disk publications easier and more productive than using the familiar telephone directory.

A major barrier to rural community acceptance of this new information is the perception that computers are mysterious enough already and that a person doesn't really need such fancy information sources. But by placing some highly useful publications on optical disks in rural communities where word-of-mouth experience is communicated quickly, the new technology may easily sell itself.

Information Opportunities for Rural Places

The Optical Information Systems (OIS) conference provided an opportunity to talk with people who are using the optical disk to publish in hitherto unimaginable ways.

The most impressive example of these applications for this writer is The State Education Encyclopedia. School administrators in the state of Texas had to cope with the equivalent of 3 file cabinets of documents, shelves of adminstrative manuals, legal codes, together with a constant flow of updates in the form of loose-leaf pages, memoes, and other documents. Finding relevant instructions, rulings, and guidelines, much less using the data to respond to boards of education, was a costly nightmare.

An innovative former staff member of the state department of education has put this whole mess on to CD-ROM (compact disk-read only memory) optical disks, a 4.7 inch disk read by a laser disk drive attached to an IBM PC XT or AT, or 100% compatible microcomputer. Each CD-ROM can store for easy retrieval as many as 250,000 typed pages. The software allows easy access to all the Texas Education Code, Title 19, Texas Administrative Code, "administrators' letters", Education Commission decisions since 1979, federal statutes related to education, directories of state government, procedures, guidelines, bulletins, reference manuals, "curriculum frameworks", and a host of other data.

Not only can this enormous and dynamic mix of documents be accessed in literally seconds instead of hours, but it is completely updated every 90 days with new disks. The price? $2000 a year, which includs a free CD-ROM disk drive to each new subscribing school system. The filing alone probably cost $2000 each year.

In addition to fast and easy searches of text, the user can record "marginal notes" to help in future use and interpretation of documents, codes, regulations, and guidelines. These "marginal notes" are indexed for retrieval also! The presence of any word in the text of any document can be located and viewed. The terror of wondering how to find information on a subject scattered throughout countless documents is virtually eliminated.

The technology allows even weekly updates if necessary and completely bypasses the telephone company (but not the U.S. Mail). 400 or 500 users justify publication in CD-ROM. Note that "online access" over the telephone lines to remote data bases does allow one to have the very up-to-the-minute information in a computer file. Further note that CD-ROM is a "snapshot", so to speak, of a computer file, which can never be as up to date as the original online file itself. But even online files are not necessarily updated every minute; some are not updated as frequently as weekly. The user must evaluate the trade-off of local user-friendly searching versus being "up-to-the-minute" using long distance lines, search procedures peculiar to each computer file, and paying connect-time charges according to a "ticking

meter".

The technology allows for local preparation of data for the optical disk with production of the disk done by special firms. Local production of disks was also demonstrated at the conference.

Real estate databases previously published on microfiche, statistical databases previously only searchable during online sessions over expensive and psychologically inhibiting long distance lines, map files, reference works previously only in book form, and many other essential reference tools are being published or considered for publication on optical disks for use in personal computer systems.

Looking Ahead For Rural Areas

CD ROM technology offers the opportunity to publish a variety of information of value to rural areas (and for that matter for any area that wants cost beneficial access to large files of frequently used information.

A number of examples come to mind:

+ The state code of law and administrative code which is used by businesses, government agencies, organizations and individuals is a prime opportunity for dynamic access.

+ Packages of guidelines, excerpts of laws, codes, regulations, and other documents for school administrators, city & county government managers.

+ Large files cataloging the holdings of libraries, such as the recently published LaserCat by the Western Library Network which indexes the books and their locations in the Pacific Northwest. This technology is now operational on an IBM-PC XT at the Pend Oreille County Library, serving 9000 residents in 2250 square miles of mountains and river valley. The LaserCat disks bring 20 times the cost-benefit for only 3 times the cost of the superceded microfiche edition of the same file which is produced once a year.

In addition to being published quarterly instead of annually, the three disk package provides cataloging information about books outside the Pacific Northwest, data which has not been cost-beneficial to publish with earlier technologies for small rural libraries.

+ Indexes and catalogs for automobile and electronics parts and equipment, real estate and businesses for sale and lease -- you name it -- that allow rural businesses to have easy access to inventories, thereby eliminating lost opportunities for doing business for lack of appropriate information and sources.

+ Maps and indexes to their features for specific areas. The U. S. Geological Service is progressively converting all map data to computer-readable and -storable form. One company at the OIS conference makes available geological survey maps on CD ROM. Users can not only search for topograpical and place data, but can electronically add graphic or text information to the maps for local use and special printed display.

Major Challenges

This writer was struck with the challenges which this optical technology offers.

First, it challenges the average information seeker to think of things that he or she hasn't even thought possible. If one has never used a computer to produce a letter and discovered how easy it is to produce virtually an error-free printed document, he or she cannot appreciate giving up the manual typerwriter. If one has never used a hand calculator, the manual method seems adequate. So, it seems as though the biggest barrier to adopting this technology in rural areas (and anywhere) is an attitude of openness to new and more productive and cost-beneficial ways of doing things.

Secondly, it challenges the publishers to produce "automated" publications which anticipate how the seeker naturally approaches solving the information problem or question. The examples described in the popular press and seen at the OIS conference suggest that the publishers are using the optical disk to create some very useful solutions to using different kinds of

information. They have to in order to nudge users away from familiar (and creaky) microfiche and paper display systems. It is clear that if the personal computer revolution is going to really take off, computer-user relations must be very simple and user-natural.

Thirdly, it challenges publishers and users to think about how information is really most usefully accessed, displayed, printed out, digested and stored for end-users. Existing paper files can be scanned, edited and converted to computer-storable form for use on optical disks. The optical disk linked with the microcomputer provides an enormously large and productive "playing field" with room to bring together both indexing systems and the "documents" and data in a dynamic way. To some extent it answers the problem which powerful indexes have raised: "Now how do we get the documents and data which are referred to in the index?" Optical disk technology provides room for both the indexes and documents/text on the same searchable medium for the not-so-well-heeled user -- that includes the rural American business, government agency, organization, and individual.

Finally, the technology suggests that city and county officials, business managers, organization leaders, and individuals should carefully evaluate their current methods of storing, using, and accessing information. They should ask questions of state and regional governments about publishing statistical and economic data in computer form for publishing on optical disks and/or regional online systems. Most importantly, they should assume that if they don't seem to have a source of information to answer current questions, that such a source exists somewhere or might be brought into useful existence using microcomputer and optical disk technology.

Conclusions

So often one assumes that he or she must be able to speak the language of information and computer experts in order to get their attention, response or support. That is not true in the cases of many new technology people. But patience and determination are essential in trying to help designers of new technology products to understand user needs.

The OIS conference made clear that in an ever-more-competitive marketplace, designers of user information systems ARE LISTENING to us users. Can we stop long enough to invest some of our time in helping re-design the way we get the facts which make our government, business, organizations and lives more productive?

It is sad that hands-on exhibits for rural (and urban) businessmen, government officials, and others are so costly and difficult to arrange. Probably more difficult is to get the non-computer information user to feel comfortable taking an afternoon to expose him or herself to these new technologies.

The most useful suggestion this writer can make for those truly interested in what this new technology offers to those of us who are comfortable with file cabinets, manual typerwriters and copy machines, is that you write Draper Kauffman, Quantum Access, Inc., 1700 West Loop South, Suite 1460, Houston, TX 77027 or call 1-800-822-4211 and ask for information or a demonstration of The State Education Encyclopedia on CD-ROM. This suggestion is made because the Encyclopedia is the clearest, most understandable demonstration of the revolutionary opportunities this new technology offers to those coping with "information overkill". It was the one down-to-earth highlight of the conference for this writer.

For those of you who wonder if these new technologies will ever settle down, I would suggest you don't hold your breath. But, when information is in computer format, it can migrate from one automated medium to another with appropriate software adjustments and some editing. Computer-based files need not become obsolete because they happen to be housed on a particular medium which is superceded by something better.

Epilogue

One of the last sessions dealt with the "laser card", a credit card sized optical medium which can store up to 800 pages of information. A product of Drexler Technology Corporation, the LaserCard (TM) can store a lifetime of personal medical history and be updated with each new treatment. It can store the accumulated record of all the library books you've borrowed (and, hopefully, read). It can hold the operational and maintenance manual for sophisticated equipment and allow permanent recording of all maintenance, repair, and location use data updated at the time of each transaction. A hand-held lasercard reader/writer is envisioned for this version of optical information technology.

Technology appears to be outstripping this writer's imagination, making him identify with those who watched Wilbur and Orville and wondered (with excitement) where it might all lead. Computers will increasingly become invisible parts of the equipment we acquire in the future. We can stop wondering what the computer can do and spend more time working on what needs to be done.

Further Reading On Optical Information Technologies

Call or visit your local public (or other kind of) librarian for books, magazine articles, and referral information on local businesses or organizations dealing with optical disks (especially CD-ROM), videodiscs, electronic publishing, and optical information systems.

You may be surprised to find optical disks already in use for information retrieval in your public or academic library. There are articles at the lay person level of understanding in news magazines such as Time, Newsweek and other general circulation magazines and microcomputer magazines.